National Aeronautics and Space Administration
Office of Equal Opportunity Programs
Minority University Research and Education Division
Washington, DC 20546-0001

NRA 99-OEOP-2
Issued: May 22, 1998
Notice of Intent due: June 30, 1998
Proposal Due: August 27, 1998
Selection Announcement: November, 1998

Minority University Mathematics, Science and Technology Awards for Teacher and Curriculum Enhancement Program (MASTAP)

NASA Research Announcement (NRA)

Found at: http://www.hq.nasa.gov/office/codee/mured.html

INQUIRIES

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Minority University Mathematics, Science and Technology Awards for Teacher and Curriculum Enhancement Program (MASTAP)

This NASA Research Announcement (NRA) solicits proposals for 4-year US colleges and universities to develop diverse and exemplary research-based mathematics, science and technology teacher preparation and curriculum enhancement projects. This proposal should be a collaborative effort between the minority universities and a school district with predominant enrollment of socially and economically disadvantaged and/or disabled students (hereafter referred to as disadvantaged students).

The expected outcome from a project funded under this program is demonstrated enhancements to the mathematics, science and technology teacher education curricula at the targeted institutions and a measurable increase in the number and percentage of state-certified teachers employed in hard to staff schools serving a significant number of disadvantaged students.

Awards will be made based on merit reviews. Each award will consist of an annual grant, not to exceed $200,000 per year for a maximum of 3 years in support of the proposed educational research activities. Continuation of funding for years two and three is predicated on documented progress reported annually and the availability of funds. Failure to make adequate progress in any one year will result in termination of the grant and continuation funding will not be provided. Further, continuation funding may be reduced if cost reporting indicates a significant level of unexpended funding.

Please note that since the last funding cycle for MASTAP the following significant changes have been made to the Program. Community Colleges may now apply as the lead institution with partner schools that have Education Departments. Elementary schools are now allowed to participate in the program.

Your interest and cooperation in participating in NASA's Minority University MASTAP are appreciated.

George E. Reese
Associate Administrator for
Equal Opportunity Programs

Minority University Mathematics, Science and Technology Awards for Teacher and Curriculum Enhancement Program (MASTAP)

I. INTRODUCTION

As the United States becomes increasingly technology-based it is critical that science and technology in America's schools be strengthened. As the US and world economies change, the demographics of this nations' schools is also changing: it is projected that by the early part of the 21st century, minorities will comprise close to one-half of all US school children. For our Nation to achieve and maintain a position of economic leadership, all of its citizens must acquire the necessary skills to compete in an increasingly global, technological society. This requires our schools and our teachers to deliver a world class education to all students. Rapidly changing student demographics coupled with a renewed emphasis on educational reform have increased awareness of the need to improve curriculum and teacher preparation, to integrate theory and practice and to determine what works in educating all of our students, particularly in the areas of mathematics, science, technology and geography.

NASA invites proposals from eligible minority colleges and universities to develop under MASTAP diverse and exemplary research-based mathematics, science, technology and geography teacher education curricula that can be replicated at other colleges and universities. This program is designed to supplement and extend the content of NASA programs to minority universities teacher education curricula.

NASA is committed to increasing diversity among mathematics, science, technology and geography state-certified teachers. NASA's effort is bolstered by Federal Regulations [(29CFR1614.102(14)] which direct each Federal agency to maintain a continuing affirmative program to promote equal opportunity. It also requires cooperative action at the community level with other employers, schools, universities and public and private groups to improve employment opportunities and community conditions that affect employability by Federal agencies. Additionally, Executive Order 12821, Improving Mathematics and Science Education in Support of the National Education Goals, mandates Federal agencies to assist in the mathematics, science, technology and geography education of our Nation's students and teachers, while Executive Order 12900, Educational Excellence for Hispanic Americans, mandates Federal agencies to establish action plans aimed at increasing Hispanic American participation in Federal education programs where they are currently under-served. Moreover, Executive Order 13021, Tribal Colleges and Universities, mandates Federal agencies to increase accessibility of Federal resources for Tribal Colleges and Universities (TCU) in tribal communities and to assure that the TCU's have equal access to those opportunities afforded other institutions, including a commitment of Federal resources to TCU's on a continuing basis. Executive Order 12876, Historically Black Colleges and Universities (HBCU), mandates Federal agencies in order to advance the development of human potential, to strengthen the capacity of HBCU's to provide quality education, and to increase opportunities to participate in and benefit from Federal programs.

The proposal should be a collaborative effort between the Minority University and a school district with substantial enrollments of socially and economically and/or disabled students (hereafter referred to as disadvantaged students). The expected outcome from this collaborative effort is an increase in the number and percentage of state-certified Mathematics, Science, Engineering and Technology (MSET) teachers in schools with high percentages of disadvantaged students (hereafter referred to as hard to staff schools). We seek initiatives that educators, parents, business, industry and professional groups will enthusiastically embrace and that will result in the improved scientific, mathematical, technological and academic achievement of students.

II. PROGRAM DESCRIPTION

A. Purpose of Program

The primary purpose of MASTAP is to strengthen HBCU's and Other Minority Universities (OMU), including Hispanic-Serving Institutions (HSI) and TCU's teacher education programs and thereby increase the number and percentage of certified mathematics, science, technology and geography teachers who are employed in hard to staff schools. As a result of this award, selected teachers participating in the institution's teacher education program will have knowledge of national and state teaching standards and they will be exposed to NASA's education programs, materials, and services.

B. Award Size and Duration

The announcement of MASTAP awards will be made in December 1998. Each award will be established under a grant.

Each of the grant awards will provide a range from $50,000 to $200,000 annually for each of 3 years of support for a total of up to $600,000. Continuation of funding for years two and three is predicated on documented progress reported annually and the availability of funds. Failure to make adequate progress in any one year will result in termination of the grant and continuation funding will not be provided. Further, continuation funding may be reduced if cost reporting indicates a significant level of unexpended funding.

C. Goals

The goals of MASTAP are:

1. To increase the number of state-certified teachers in hard to staff elementary, middle and secondary schools with substantial enrollments of disadvantaged students by strengthening their technical skills and knowledge; and
2. To enhance teacher education curricula and thereby improve mathematics and science literacy among teachers serving disadvantaged elementary, middle and secondary schools students.
3. To support the ability of the minority universities through improved recruitment and retention methods in order to increase the percentages of certified mathematics, science, technology and geography teachers who work in hard to staff schools.

D. Objectives

The objectives of MASTAP are to:

1. Improve teacher education curricula and thereby, pre-service teaching skills and experiences of undergraduates preparing for careers in teaching mathematics, science, technology and geography at the elementary, middle and secondary school levels in hard to staff schools.
2. Enhance the pre-service curriculum to provide pedagogical models emphasizing: (1) team teaching in hard to staff elementary, middle and secondary schools with substantial numbers of disadvantaged students; (2) mathematics and science standards and assessment; (3) activities involving applications of critical thinking; and (4) culturally-sensitive approaches to teaching science and mathematics
3. Expand pre-service education students' knowledge of career opportunities as mathematics, science or technology teachers
4. Expand teachers ability to utilize NASA's instructional materials and other resources in the design, development and delivery of state-approved mathematics, science, technology and geography curriculum
5. Disseminate information on successful strategies and models to other minority colleges and universities and to hard to staff elementary, middle and secondary schools

E. Outcomes

The expected outcomes include:

- Increased numbers and percentage of state-certified mathematics, science or technology teachers in hard to staff elementary, middle and secondary schools
- Increased number of state-certified MSET teachers employed in hard to staff elementary, middle and secondary schools

III. ELIGIBILITY

A. Institutions

All proposals must originate from US colleges or universities that meet the following criteria. Proposing institutions ***must:***

1. ***Meet one of the following criteria:***

   a) Be an accredited minority college or university with enrollment of a single socially and economically disadvantaged and/or disabled group or the combination of underrepresented minority groups that exceeds 50 percent of the total student enrollment as defined in the Higher Education Act, as amended [See 20 USC 1135d-5 and 34 CFR 637.4 (b)]; ***or***

   b) Be designated by the Department of Education as a Hispanic-Serving Institution (HSI) under Title III of the Higher Education Act of 1965, as amended [See 20 USC 1059c, Public Law 102-325-July 23, 1992-Section 316]; ***or***

   c) Be an institution designated by the Department of Education as a Historically Black College and University under Title III of the Higher Education Act of 1965, as amended (see 34 CFR 608.2.); ***or***

d) Be designated a Tribal College or University as defined by Executive Order 13021, Section 1, as those institutions cited in Section 532 of the Equity in Educational Land-Grant Status Act of 1994, (7 U.S.C. 301 note) and any other institution that qualifies for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 *et seq.)* and Navajo Community College, authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, Title III (25 U.S.C. 840a note).

A list of some of the eligible institutions, as identified by the Department of Education, is available online at http://www.hq.nasa.gov/office/codee/mured.html
If your institution does not appear on this list please call the Department of Education.

And

2. Offer an undergraduate degree in education that leads to teacher certification, or
3. Be a Community College which partners, as the lead institution, with any other institution of higher education that offers an undergraduate degree in education that results in teacher certification.

B. Principal Investigators

The principal investigator must be a citizen of the United States, employed by the institution's teachers education department, and have demonstrated experience with the education of disadvantaged students in mathematics, science, technology and geography. Principal Investigators must devote at least 25 percent of their time to the project. NASA will not fund more than 50 percent of any personnel's documented annual salary.

C. Participants

Teachers and pre-service teachers receiving scholarships and/or stipends under this grant must be citizens of the United States. Participants in programs funded by this grant must be currently working in hard to staff schools or be willing to make a commitment to work in these schools, or be enrolled in the second year of a full-time teacher preparation program at an accredited US college or university that meets the eligibility criteria outlined in Section III A. The students selected must have and maintain a grade point average of 3.0 or higher and make a commitment to teach mathematics, science or technology in schools with substantial enrollments of disadvantaged students. Each student will be entered into a centralized NASA database for efficiency and cost-effectiveness in tracking performance.

IV. PROPOSAL EVALUATION

A. Evaluation Criterion

Proposals will be evaluated based on the criteria listed below in descending order of importance

1. *Technical Soundness*. Overall project design; its technical soundness and approach; its relevance to NASA's MASTAP goals, objectives and outcomes; and to the institution's teacher education goals, inclusion of national, state and local, goals, objectives and problem(s) to be addressed. The strategies, curriculum, methodology and NASA resources used. The quality and clarity of service offered to pre-service teachers. The design of the teacher education curricula that will lead to interaction between in-service teachers and pre-service teachers. The number and percentage of teachers to be certified during each year of the program.
2. *Partnership Plan*. Strength of the partnership plan between the institution that produces teachers and the school district that employs them. Extent of pre-service teacher involvement in partnership school's mathematics, science, technology and geography. Extent of collaboration between appropriate departments, such as: mathematics, science, and technology within the university. Extent of support from industry, other government agencies, and colleges and universities that will be used to enhance the training project.
3. *Project Relevance and Growth Potential.* Evidence of the strength, quality and capabilities of the university's or two-year colleges partner's undergraduate education program. Potential of proposed project to contribute to the production of state-certified teachers employed in hard to staff schools. Likelihood that the project will become an integral part of the institution's teacher education program and serve as a new or improved model to be replicated at other universities.
4. *Performance Competence and Management*. Qualifications of the principal investigator and other key personnel to do the task. Evidence of key personnel's skill and experience in establishing teacher education programs that resulted in an increasing number of state certified MST teachers. Time commitment to the project. Evidence of management experience and past accomplishments. Feasibility of accomplishing the tasks with the given resources. Overall adequacy of project management.
5. *Experience and Demonstrated Success*. Evidence of past experience developing and managing teacher preparation and curriculum enhancement programs to serve disadvantaged students. Documentation of participants served and their accomplishments, and of unique educational methods and materials developed.
6. *University Resources and Commitment*. Clear evidence of adequate and available institutional resources and the university's long-term commitment of resources, staffing, computer and equipment that support the project and teacher education. Evidence of the strength and quality of the partnership between the teacher education, mathematics, and sciences departments and their long-term commitment to institutionalize the project within the university or college's teacher education department.
7. *Evaluation and Dissemination*. Methodological soundness of formative and summative evaluation designs. Feasibility of evaluation plan. Cost-effectiveness of plan. Reasonableness and measurability of project objectives. Adequacy of the plan to collect and report the participant data timely and accurately to NASA. Adequacy and relevance of evaluation criteria and data. Adequacy of dissemination plan.
8. *Reasonableness of Costs*. Appropriateness of the budget, including cost per participant, the realism and reasonableness of proposed cost and the relationship of

the proposed cost to available funds. Cost-effectiveness of the project. Percent of budget devoted to direct services. Availability of cost-sharing.

B. Review and Selection Process

Proposals will be evaluated on the basis of a merit review. Reviews may include ad hoc mail reviews, panel reviews by recognized academic and scientific experts and NASA Installation reviews, as appropriate. External reviewers will be broadly representative of the various types of eligible organizations.

V. PROPOSAL PREPARATION AND SUBMISSION

A. Schedule

- Letter of Intent ***June 30, 1998***
- Proposal Due ***August 27, 1998***
- Selection Announcement ***November, 1998***

Proposals must be received no later than 4:30 pm (EST) on ***August 27, 1998***.

B. Solicitation Resources

1. Solicitation Availability

A copy of the solicitation and the forms are available electronically via the Internet at the following address http://www.hq.nasa.gov/office/codee/mured.html

2. Contacts for questions

If you have any questions pertaining to this solicitation you may contact:

Ms. Millie Mateu
Minority University Program Specialist
NASA Headquarters
Code EU
300 E Street, SW
Washington, DC 20546

Telephone: (202) 358-0954
Fax: (202) 358-3745
TDD: (202) 358-3748
Email: mmateu@hq.nasa.gov

C. Notice of Intent

To facilitate proposal processing and selection of reviewers, the proposed principal investigato requested to confirm plans to submit a proposal by emailing a one-page letter of intent. This letter should contain: proposed project title, a brief summary describing the proposed project, potential principal investigator, and the potential members to be included in a partnership or collaboration. This non-binding notice must be received by ***June 30, 1998***. The email address is MUREDSupport@alliedtech.com

D. Project Design and Content

A project must be designed to embrace the teacher education curricula so as to address the underrepresentation of certified mathematics, science, technology and geography teachers in hard to staff elementary, middle and secondary schools. Projects must promote excellence and equity. The content must reflect the direction of curriculum standards of the National Council of Teachers of Mathematics and of the National Research Council. The project should also be linked to emerging national, state and district frameworks and curriculum guidelines that are consistent with these standards.

Initiatives should include specific plans to team pre-service and in-service mathematics, science, technology and geography teachers in hard to staff schools. Effective teaming activities should support and complement pre-service teacher preparation such as enhancement activities for pre-service teachers under the guidance of in-service teachers, and activities to facilitate the successful induction of new state-certified mathematics, science, technology and geography state-certified teachers into the classrooms of hard to staff schools.

The design must integrate NASA teacher education resource materials. An emphasis should be placed on connections between and within mathematics, science, technology and geography, as well as, on problem-solving activities and the use of hands-on experiences. The design should also reflect current research in teaching and learning that introduce innovative application of advanced technologies into education.

Strong emphasis is placed on diverse, innovative, and culturally sensitive projects with cohesive, collaborative strategies and specific outcomes. The program is designed to produce measurable results such as: an increase in the number and percentage of individuals applying for and passing the state's teacher certification program. Detailed data collection is required in all projects for monitoring and evaluation and reporting outcomes into the NASA database.

E. Proposal Format

Proposals must be typed (font size 12, TIMES, double-spaced). The proposal must not exceed 50 pages total including all required certifications, forms and appendices. All pages should be clearly numbered and the first page of every proposal should be the cover page form (see Form 1). Do not attach appendices other than those required by this announcement.

Proposals must contain the following sections, clearly identified and in the order presented below. The maximum number of pages permitted and the corresponding proposal evaluation criterion for each section is identified in the following:

1. ***Proposal cover sheet*** General PI, Institution and proposal information (Form 1, 1 page)

2. ***Table of contents*** (1 page)

3. ***Abstract*** A brief description of the proposed project (Form 2, 1 page)

4. ***University cover letter*** A letter that describes in detail the university's support and resource commitments to this project. (1 page)

5. ***Institution and PI eligibility*** A form to certify the eligibility of the institution and PI as set forth in Section III (Form 3, 2 pages)

6. ***Budget Forms*** One budget form is required for each year the grant runs (Form 4, 3 pages)

7. ***Three-year MASTAP*** Describe in detail the project design including the problems to be addressed and the project goals and objectives and how they relate to NASA's MASTAP and the institution's goals and objectives. Concretely describe the enhancements to be made to the teacher education curricula and the involvement of the mathematics, science, and technology departments in the projects. Outline in detail (per year) all project components and activities including the number of teacher certificates to be achieved during each of the three year periods, and the strategies, curriculum, methodology and NASA resources to be used. Explain the role of in-service teachers serving elementary, middle and secondary schools with substantial enrollments of disadvantaged students and how they will be teamed with pre-service teachers. (6 pages)

8. ***Partnership plan*** Provide evidence of the strength of the existing relationship between the university and the partnership school district(s) and between appropriate departments within the university. In the partnership plan, describe the proposed collaboration with industry, other universities, NASA and/or other government agencies that will be utilized to enhance the training project, to leverage supporting funds and to provide new training opportunities for pre-service teachers. Provide an organizational chart that includes the roles and responsibilities of each partner and provide letters of support and commitment from partners. (4 pages, plus letters of support not to exceed 1 page each)

9. ***Experience and Demonstrated Success*** Provide evidence of demonstrated past experience in developing and managing pre-service teacher education programs. Briefly describe the development and management process for such programs and include any outcomes or lessons learned from the past experiences. Also, include a synopsis of any past experience with teacher education curriculum enhancement programs to serve pre-service teachers. Documentation of participants served in those programs and their accomplishments are also required. Documentation on unique educational methods or materials developed from past experiences should also be included. (4 pages)

10. ***Growth potential*** Describe the strengths and quality of the institutions and/or it's partners pre-service teacher education program. Describe how the proposed training will contribute to increased entry and retention of pre-service mathematics, science, technology and geography teachers in hard to staff schools. Explain how the training will increase the number of mathematics, science, technology and geography education degrees offered to disadvantaged students at the institution. Describe how

it will increase the number of state-certified mathematics, science, technology and geography teachers who will become employed in hard to staff middle and secondary schools. (3 pages).

11. ***Management Plan*** Provide a management plan that identifies key personnel and state the percentage of time they will devote to the planning, implementation and evaluation of the project. A specific description of the partnership between the teacher education and math and science discipline departments must be included as part of this management plan. Provide an organizational chart of all personnel, including their roles and responsibilities. Provide a timeline with milestones over the 3-year period. Indicate major activities. Identify who will do what and when. (4 ages)

    Provide biographic information for key personnel (not to exceed 1 pages each, and listing only those publications closely related to the project). Show the leadership of the principal investigator and the management expertise of the management team. Include qualifications and experience in the mathematics, science, technology and geography education of disadvantaged students. Include a separate abridged list of individuals involved in the project, identifying department affiliation, discipline, and expertise. (1 page, plus biographical information not to exceed 1 page for each)

12. ***Resources*** Outline the university's and it's partners long-term strategic commitment of resources, such as facilities, staffing, computer and experimental equipment that support the teacher education program. Show how the commitment of resources is consistent with the 3-year budget request and how the institution will institutionalize the proposed project. Describe the strengths and quality of the departments of teacher education and mathematics, science, technology and geography and how they will contribute to and support the project. (3 pages)

13. ***Evaluation and Dissemination*** Project evaluation and dissemination are essential components of this proposal. Each proposed project must include a methodologically sound and realistic evaluation plan, including both formative and summative evaluation designs. It must clearly and concisely state goals and measurable objectives, critical evaluation questions, required tracking data, the personnel needed to perform the evaluation tasks, the processes that will be used to collect and analyze the information and a time line for these activities. The evaluation plan must incorporate the measures of performance as identified in Form. It must identify how mid-course corrections will be made. A dissemination plan must also be included. It must identify the purpose, audience(s), content and strategies for dissemination as well as how impact of the dissemination will be assessed. (Evaluation reports must be provided annually. Information dissemination should take place at a minimum, annually) (Form 9, plus 3 pages)

14. ***Summary budget by year and cost element*** Include details and explanatory notes for each budget line item. Identify cost-sharing, including in-kind support, by budget line item. State salaries as a per diem of the individual or standard annual salary for the position, prorated for the planned position and time covered by the proposal. (NASA will not fund more than 50 percent of any personnel's annual documented salary.) (4 pages)

F. Proposal Submission

The ***original proposal, 6 copies and a PC or MAC disk copy*** of the proposal must be received no later than 4:30 p.m. (EST) ***on August 27, 1998.***

Submit to:

US MAIL

Ms. Millie Mateu
NRA-99-OEOP-2
Code EU
NASA Headquarters
Washington, DC 20546-0001

Commercial Delivery

Ms. Millie Mateu
Code EU
Attn: Receiving and Inspection (rear of bldg.)
NASA Headquarters
300 E Street SW
Washington, DC 20024-3210

VI. Performance

A second-year assessment will be performed by a NASA-designated review committee and will be based on an evaluation of the extent to which the goals stated in this announcement and in the original grant proposal have been achieved.

Appendix A

FORMS

FORM 1

MASTAP Proposal Cover Page

This Box for NASA Use Only _____ Proposal Number _____ Date Received	
Name of Submitting Institution	***Congressional District***
Proposal Title	
Principal Investigator - Name	Authorized Institutional Official - Name
Title	Title
Department	Department
Mailing Address	Mailing Address
Telephone Number	Telephone Number
Fax Number	Fax Number
E-mail Address	E-mail Address
Principal Investigator - Signature	Authorized Institutional Official - Signature
Date	Date

Note: The authorizing institutional signature certifies that the proposing institution has read and is n compliance with the required (1) Lobbying, (2) Debarment, Suspension, and other Responsibility Matters, and (3) Drug-Free Workplace certifications printed in full as Form 9; and the institution and PI eligibility certifications on Form 3.

MASTAP NRA 99-OEOP-2
Proposal Abstract

1. Proposal Title:

2. Principal Investigator Name, Organization:

Abstract of Proposed Program (200-300 words):

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Certification of Institution and Principal Investigator Eligibility

I. Institutional Eligibility Certification

1. Institution Name _____

2. Proposal Title _____

3. Identify Highest Degree Offered (e.g., MS, or Ph.D.) by the Institution in Mathematics, Science or Engineering

Major-***Mathematics***_____
Highest Degree_____
Major-***Science***_____
Highest Degree_____
Major-***Engineering*** _____
Highest Degree_____

4. Check the Department of Education FY 1997 Certifications Held by the Institution.

____ Minority Institution (socially and economically disadvantaged and/or disabled group(s) exceed 50% of the total student enrollment)
____ Designated Hispanic-Serving Institute
____ Designated Historically Black College or University
____ Designated Tribal College or University

Note: Institutional eligibility will be verified by data on enrollments.

II. Principal Investigator Eligibility Certification

1. Last Name First Name MI

_____

2. Verification of Employment:

Employed by (institution): _____

School/Department (specify): _____

3. Position Title: _____

4. Type of Appointment (select one): a. Tenured ____ b. Non-Tenured ____

If (b) is selected, complete the below information.

1. Tenured-track: Yes _____ No_____
2. Contract Position: Yes No _____
   If yes, single year contract? Yes No _____
   Multi-year contract? Yes ____ No____ If multi-year contract, how many?_____

5. Is Principal Investigator a US citizen? Yes ___ No ___

III. Previous NASA Funding

1. List all NASA awards, NASA contracts, NASA consulting from which the proposed PI received funding as PI or Co-I during the past 5 years, including active awards.

Column A	Column B	Column C	Column D	Column E
Award	***PI or Co-I***	***Title of Award***	***Period (from – to)***	***Amount***
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			/ / to / /	
			TOTAL FUNDING:	

Instructions:
Column A: Identify whether award was a research grant (R), education grant (E), contract (C), or consulting agreement (A).
Column B: For each award indicate whether applicant was a PI or Co-I.
Column C: List title of award.
Column D: List the period of performance.
Column E: List amount of award. For awards on which the proposed PI was a Co-I, show only that portion of the award which supported the proposed PI's personal research, and attach an explanation of how this was determined. For awards on which the proposed PI was the PI, show the total award amount.

Certification Authority
The person authorized to sign below certifies that the information provided is accurate.
Authorized Institutional Official (typed) _____

Title _____

Form 4

Institution Name: _____
Proposal Title: _____

Budget Request Summary From _____ to ____

	Project Total	***Request to NASA***	***Contributions from Institution***	***Others***
1. Direct Labor				
a. Salaries, wages	_____	_____	_____	_____
b. Fringe Benefits	_____	_____	_____	_____
2. Other Direct Costs				
a. Subcontracts	_____	_____	_____	_____
b. Consultants	_____	_____	_____	_____
c. Equipment	_____	_____	_____	_____
d. Supplies	_____	_____	_____	_____
e. Travel	_____	_____	_____	_____
f. Communication Costs (telephone, postage, printing)	_____	_____	_____	_____
g. Other (Student stipends, etc.)	_____	_____	_____	_____
3. Indirect Costs _____%	_____	_____	_____	_____
4. Other Applicable Costs	_____	_____	_____	_____
5. Total Estimated Costs	_____	_____	_____	_____

---------- INSTRUCTIONS ON FOLLOWING PAGE----------

General Instructions for Budget Summary

1. Provide a separate budget summary sheet for each year of the proposed research.
2. Provide in attachments to the budget summary the detailed computations of estimates in each category, along with any narrative explanation required to fully explain proposed costs.

Specific Instructions

1. Direct Labor (salaries, wages, fringe benefits) Attachments should list number and titles of personnel, amount of time to be devoted to the grant/cooperative agreement, and rates of pay.

   a. Fringe Benefits-Detail by element (i.e., social security, health insurance, retirement, etc.)

2. Other Direct Costs:

   a. Subcontracts - Attachments should describe the work to be subcontracted, estimated amount, recipient (if known), and the reason for subcontracting this effort.
   b. Consultants - Identify consultants to be used, why they are necessary, time to be spent on the project, and rates of pay (not to exceed the equivalent of the daily rate for GS-18 in Federal service, excluding expenses and indirect cost.)
   c. Equipment - List separately and explain the need for items of equipment exceeding $1,000. Describe the basis for the estimated cost. General purpose, non-technical equipment is not allowable as a direct cost to NASA grant/cooperative agreements unless specifically approved by the grant officer.
   d. Supplies - Provide general categories of needed supplies, the method of acquisition, estimated cost, and the basis for the estimate.
   e. Travel - List proposed trips individually, describe their purpose in relation to the grant/cooperative agreement, provide dates, destination, and number of travelers where known, and explain how the cost for each was derived.
   f. Communication Costs- Attach an itemized list explaining the need for the cost.
   g. Other - Enter the student stipends (number of students x amount of stipend for each) and any other direct costs not covered by 2.a. through 2.f. Attach an itemized list explaining the need for each item and the basis for the estimate.

3. Indirect Costs - Identify indirect cost rate(s) and base(s) as approved by the cognizant Federal agency, including the effective period of the rate. Provide the name, address, and telephone number of the Federal agency and official having cognizance over such matters for the institution. If unapproved rates are used, explain why and include the computational basis for the indirect expense pool and corresponding allocation base for each rate.
4. Other Applicable Costs - Enter the total of any other applicable costs. Attach an itemized list explaining the need for each item and the basis for the estimate.
5. Total Estimated Costs - Enter the sum of items 1 through 4.

Form 5

Table 1*: *Measures of Performance (Enrollment)

Current academic year and planned total enrollment in Department of Education over the next three years.

		PROJECTED INCREASE	
YEAR	***TOTAL NUMBER***	***NUMBER***	***PERCENT***
AY 97-98		XXXXX	XXXXX
AY 98-99			
AY 99-00			
AY 00-01			
TOTAL			

Form 6

Table 2: Measures of Performance (Degrees Awarded)

Current and planned total degree to be awarded over the next three years.

		PROJECTED INCREASE	
YEAR	***TOTAL NUMBER***	***NUMBER***	***PERCENT***
AY 97-98		XXXXX	XXXXX
AY 98-99			
AY 99-00			
AY 00-01			
TOTAL			

Form 7

Table 3: Measures of Performance (Certifications Received)

Current and planned total certification to be achieved over the next three years.

		PROJECTED INCREASE	
YEAR	***TOTAL NUMBER***	***NUMBER***	***PERCENT***
AY 97-98		XXXXX	XXXXX
AY 98-99			
AY 99-00			
AY 00-01			
TOTAL			

Form 8

Table 4: Measures of Performance

Please list any other measures of performance that will be used to evaluate the project's effectiveness and institutionalization at the end of the project period of performance such as the following:

- A placement program that establishes a close collaboration between teacher-producing colleges and the school districts that employ them in hard to staff schools

- Increased awareness and adherence to national, state and local mathematics and science standards

- Increased development and utilization of innovative applications of advanced technologies in science, mathematics, engineering and technology education

- Mathematics, science, technology and geography curricula supplemented with NASA teacher-education resource materials and interdisciplinary teaching strategies

- Materials and teaching approaches that focus on aerospace and have cultural relevance to the experiences of disadvantaged students

- Provide first-hand research experiences that could significantly strengthen program participants instructional capabilities

Please add below, any other measures which will specifically pertain to your program.

CERTIFICATIONS, DISCLOSURES, AND ASSURANCES PURSUANT TO LOBBYING, DEBARMENT & SUSPENSION, NONDISCRIMINATION, AND DRUG-FREE WORKPLACE

1. LOBBYING

As required by Section 1352, Title 31 of the US Code, and implemented at 14 CFR Part 1271, as defined at 14 CFR Subparts 1271.110 and 1260.117, with each submission that initiates Agency consideration of such applicant for award of a Federal contract, grant, or cooperative agreement exceeding $100,000, the applicant must certify that:

(a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) If any funds other than appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit a Standard Form-LLL, Disclosure Form to Report Lobbying, in accordance with its instructions.

(c) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

2. GOVERNMENTWIDE DEBARMENT AND SUSPENSION

As required by Executive Order 12549, and implemented at 14 CFR 1260.510, for prospective participants in primary covered transactions, as defined at 14 CFR Subparts 1265.510 and 1260.117 ó

A The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application / proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

B Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

3. NONDISCRIMINATION IN FEDERALLY ASSISTED PROGRAMS

The institution, corporation, firm, or other organization on whose behalf this assurance is signed, hereinafter called Applicant, HEREBY AGREES THAT it will comply with Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Title IX of the Education Amendments of 1972 (20 U.S.C. 1680 et seq.), Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and the Age Discrimination Act of 1975 (42 U.S.C. 16101
et seq.), and all requirements imposed by or pursuant to the Regulation of the National Aeronautics and Space Administration (14 CFR Part 1250)(hereinafter called NASA) issued pursuant to these laws, to the end that in accordance with these laws and regulations, no person in the United States shall, on the basis of race, color, national origin, sex, handicapped condition, or age be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Applicant receives Federal financial assistance from NASA; and HEREBY GIVES ASSURANCE THAT it will immediately take any measure necessary to effectuate this agreement.

If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to the Applicant by NASA, this assurance shall obligate the Applicant, or in the case of any transfer of such property, and transferee, for the period during which the real property or structure is used for a purpose for which the Federal financial assistance is extended or for another purpose involving the provision of similar services or benefits. If any personal property is so provided, this assurance shall obligate the Applicant for the period during which it retains ownership or possession of the property. In all other cases, this assurance shall obligate the Applicant for the period during which the Federal financial assistance is extended to it by NASA. THIS ASSURANCE is given in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property, discounts or other Federal financial assistance extended after the date hereof to the Applicant by NASA, including installment payments after such date on account of applications for Federal financial assistance which were approved before such date. The applicant recognizes and agrees that such Federal financial assistance will be extended in reliance on the representations and agreements made in this assurance, and that the United States shall have the right to seek judicial enforcement of this assurance. This assurance is binding on the Applicant, its successors, transferees, and assignees, and the person or persons whose signatures appear below are authorized to sign on behalf of the Applicant.

4. DRUG-FREE WORKPLACE

The applicant agrees that it will or will continue to provide a drug-free workplace as required by the Drug-Free Workplace Act of 1988, P.L. 100-690, as amended.

(Signature, Authorized Official)

(Organization Name)

(Date)

Appendix B

INSTRUCTIONS FOR RESPONDING TO NASA RESEARCH ANNOUNCEMENTS

(JANUARY 1997)

(a) General.

(1) Proposals received in response to a NASA Research Announcement (NRA) will be used only for evaluation purposes. NASA does not allow a proposal, the contents of which are not available without restriction from another source, or any unique ideas submitted in response to an NRA to be used as the basis of a solicitation or in negotiation with other organizations, nor is a pre-award synopsis published for individual proposals.

(2) A solicited proposal that results in a NASA award becomes part of the record of that transaction and may be available to the public on specific request; however, information or material that NASA and the awardee mutually agree to be of a privileged nature will be held in confidence to the extent permitted by law, including the Freedom of Information Act.

(3) NRAs contain programmatic information and certain requirements which apply only to proposals prepared in response to that particular announcement. These instructions contain the general proposal preparation information which applies to responses to all NRAs.

(4) A contract, grant, cooperative agreement, or other agreement may be used to accomplish an effort funded in response to an NRA. NASA will determine the appropriate instrument. Contracts resulting from NRAs are subject to the Federal Acquisition Regulation and the NASA FAR. Supplement. Any resultant grants or cooperative agreements will be awarded and administered in accordance with the NASA Grant and Cooperative Agreement Handbook (NPG 5800.1).

(5) NASA does not have mandatory forms or formats for responses to NRAs; however, it is requested that proposals conform to the guidelines in these instructions. NASA may accept proposals without discussion; hence, proposals should initially be as complete as possible and be submitted on the proposers' most favorable terms.

(6) To be considered for award, a submission must, at a minimum, present a specific project within the areas delineated by the NRA; contain sufficient technical and cost information to permit a meaningful evaluation; be signed by an official authorized to legally bind the submitting organization; not merely offer to perform

standard services or to just provide computer facilities or services; and not significantly duplicate a more specific current or pending NASA solicitation.

(b) NRA-Specific Items. Several proposal submission items appear in the NRA itself: the unique NRA identifier; when to submit proposals; where to send proposals; number of copies required; and sources for more information. Items included in these instructions may be supplemented by the NRA.

(c) The following information is needed to permit consideration in an objective manner. NRAs will generally specify topics for which additional information or greater detail is desirable. Each proposal copy shall contain all submitted material, including a copy of the transmittal letter if it contains substantive information.

(1) Transmittal Letter or Prefatory Material.

(i) The legal name and address of the organization and specific division or campus identification if part of a larger organization;

(ii) A brief, scientifically valid project title intelligible to a scientifically literate reader and suitable for use in the public press;

(iii) Type of organization: e.g., profit, nonprofit, educational, small business, minority, women-owned, etc.;

(iv) Name and telephone number of the principal investigator and business personnel who may be contacted during evaluation or negotiation;

(v) Identification of other organizations that are currently evaluating a proposal for the same efforts;

(vi) Identification of the NRA, by number and title, to which the proposal is responding;

(vii) Dollar amount requested, desired starting date, and duration of project;

(viii) Date of submission; and

(ix) Signature of a responsible official or authorized representative of the organization, or any other person authorized to legally bind the organization (unless the signature appears on the proposal itself).

(2) ***Restriction on Use and Disclosure of Proposal Information***. Information contained in proposals is used for evaluation purposes only. Offerors or quoters should, in order to maximize protection of trade secrets or other information that is confidential or privileged, place the following notice on the title page of the

proposal and specify the information subject to the notice by inserting an appropriate identification in the notice. In any event, information contained in proposals will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

Notice

Restriction on Use and Disclosure of Proposal Information

The information (data) contained in [insert page numbers or other identification] of this proposal constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed other than for evaluation purposes; provided, however, that in the event a contract (or other agreement) is awarded on the basis of this proposal the Government shall have the right to use and disclose this information (data) to the extent provided in the contract (or other agreement). This restriction does not limit the Government's right to use or disclose this information (data) if obtained from another source without restriction.

(3) ***Abstract.*** Include a concise (200-300 word if not otherwise specified in the NRA) abstract describing the objective and the method of approach.

(4) ***Project Description***.

(i) The main body of the proposal shall be a detailed statement of the work to be undertaken and should include objectives and expected significance; relation to the present state of knowledge; and relation to previous work done on the project and to related work in progress elsewhere. The statement should outline the plan of work, including the broad design of experiments to be undertaken and a description of experimental methods and procedures. The project description should address the evaluation factors in these instructions and any specific factors in the NRA. Any substantial collaboration with individuals not referred to in the budget or use of consultants should be described. Subcontracting significant portions of a research project is discouraged.

(ii) When it is expected that the effort will require more than one year, the proposal should cover the complete project to the extent that it can be reasonably anticipated. Principal emphasis should be on the first year of work, and the description should distinguish clearly between the first year's work and work planned for subsequent years.

(5) ***Management Approach***. For large or complex efforts involving interactions among numerous individuals or other organizations, plans for distribution of

responsibilities and arrangements for ensuring a coordinated effort should be described.

(6) ***Personnel***. The principal investigator is responsible for supervision of the work and participates in the conduct of the research regardless of whether or not compensated under the award. A short biographical sketch of the principal investigator, a list of principal publications and any exceptional qualifications should be included. Omit social security number and other personal items which do not merit consideration in evaluation of the proposal. Give similar biographical information on other senior professional personnel who will be directly associated with the project. Give the names and titles of any other scientists and technical personnel associated substantially with the project in an advisory capacity. Universities should list the approximate number of students or other assistants, together with information as to their level of academic attainment. Any special industry-university cooperative arrangements should be described.

(7) ***Facilities and Equipment.***

(i) Describe available facilities and major items of equipment especially adapted or suited to the proposed project, and any additional major equipment that will be required. Identify any Government-owned facilities, industrial plant equipment, or special tooling that are proposed for use. Include evidence of its availability and the cognizant Government points of contact.

(ii) Before requesting a major item of capital equipment, the proposer should determine if sharing or loan of equipment already within the organization is a feasible alternative. Where such arrangements cannot be made, the proposal should so state. The need for items that typically can be used for research and non-research purposes should be explained.

(8) ***Proposed Costs.***

(i) Proposals should contain cost and technical parts in one volume: do not use separate "confidential" salary pages. As applicable, include separate cost estimates for salaries and wages; fringe benefits; equipment; expendable materials and supplies; services; domestic and foreign travel; ADP expenses; publication or page charges; consultants; subcontracts; other miscellaneous identifiable direct costs; and indirect costs. List salaries and wages in appropriate organizational categories (e.g., principal investigator, other scientific and engineering professionals, graduate students, research assistants, and technicians and other non-professional personnel). Estimate all staffing data in terms of staff-months or fractions of full-time.

(ii) Explanatory notes should accompany the cost proposal to provide identification and estimated cost of major capital equipment items to be acquired;

purpose and estimated number and lengths of trips planned; basis for indirect cost computation (including date of most recent negotiation and cognizant agency); and clarification of other items in the cost proposal that are not self-evident. List estimated expenses as yearly requirements by major work phases.

(iii) Allowable costs are governed by FAR Part 31 and the NASA FAR Supplement Part 1831 (and OMB Circulars A-21 for educational institutions and A-122 for nonprofit organizations).

(9) ***Security***. Proposals should not contain security classified material. If the research requires access to or may generate security classified information, the submitter will be required to comply with Government security regulations.

(10) ***Current Support***. For other current projects being conducted by the principal investigator, provide title of project, sponsoring agency, and ending date.

(11) ***Special Matters.***

(i) Include any required statements of environmental impact of the research, human subject or animal care provisions, conflict of interest, or on such other topics as may be required by the nature of the effort and current statutes, executive orders, or other current Government-wide guidelines.

(ii) Proposers should include a brief description of the organization, its facilities, and previous work experience in the field of the proposal. Identify the cognizant Government audit agency, inspection agency, and administrative contracting officer, when applicable.

(d) ***Renewal Proposals***

(1) Renewal proposals for existing awards will be considered in the same manner as proposals for new endeavors. A renewal proposal should not repeat all of the information that was in the original proposal. The renewal proposal should refer to its predecessor, update the parts that are no longer current, and indicate what elements of the research are expected to be covered during the period for which support is desired. A description of any significant findings since the most recent progress report should be included. The renewal proposal should treat, in reasonable detail, the plans for the next period, contain a cost estimate, and otherwise adhere to these instructions.

(2) NASA may renew an effort either through amendment of an existing contract or by a new award.

(e) ***Length.*** Unless otherwise specified in the NRA, effort should be made to keep proposals as brief as possible, concentrating on substantive material. Few proposals need exceed 15-20 pages. Necessary detailed information, such as reprints, should be included as attachments. A complete set of attachments is necessary for each copy of the proposal. As proposals are not returned, avoid use of "one-of-a-kind" attachments.

(f) ***Joint Proposals***.

(1) Where multiple organizations are involved, the proposal may be submitted by only one of them. It should clearly describe the role to be played by the other organizations and indicate the legal and managerial arrangements contemplated. In other instances, simultaneous submission of related proposals from each organization might be appropriate, in which case parallel awards would be made.

(2) Where a project of a cooperative nature with NASA is contemplated, describe the contributions expected from any participating NASA investigator and agency facilities or equipment which may be required. The proposal must be confined only to that which the proposing organization can commit itself. "Joint" proposals which specify the internal arrangements NASA will actually make are not acceptable as a means of establishing an agency commitment.

(g) ***Late Proposals***. A proposal or modification received after the date or dates specified in an NRA may be considered if doing so is in the best interests of the Government.

(h) ***Withdrawal.*** Proposals may be withdrawn by the proposer at any time before award. Offerors are requested to notify NASA if the proposal is funded by another organization or of other changed circumstances which dictate termination of evaluation.

(i) ***Evaluation Factors***

(1) Unless otherwise specified in the NRA, the principal elements (of approximately equal weight) considered in evaluating a proposal are its relevance to NASA's objectives, intrinsic merit, and cost.

(2) Evaluation of a proposal's relevance to NASA's objectives includes the consideration of the potential contribution of the effort to NASA's mission.

(3) Evaluation of its intrinsic merit includes the consideration of the following factors of equal importance:

(i) Overall scientific or technical merit of the proposal or unique and innovative methods, approaches, or concepts demonstrated by the proposal.

(ii) Offeror's capabilities, related experience, facilities, techniques, or unique combinations of these which are integral factors for achieving the proposal objectives.

(iii) The qualifications, capabilities, and experience of the proposed principal investigator, team leader, or key personnel critical in achieving the proposal objectives.

(iv) Overall standing among similar proposals and/or evaluation against the state-of-the-art.

(4) Evaluation of the cost of a proposed effort may include the realism and reasonableness of the proposed cost and available funds.

(j) ***Evaluation Techniques***. Selection decisions will be made following peer and/or scientific review of the proposals. Several evaluation techniques are regularly used within NASA. In all cases proposals are subject to scientific review by discipline specialists in the area of the proposal. Some proposals are reviewed entirely in-house, others are evaluated by a combination of in-house and selected external reviewers, while yet others are subject to the full external peer review technique (with due regard for conflict-of-interest and protection of proposal information), such as by mail or through assembled panels. The final decisions are made by a NASA selecting official. A proposal which is scientifically and programmatically meritorious, but not selected for award during its initial review, may be included in subsequent reviews unless the proposer requests otherwise.

(k) ***Selection for Award***.

(1) When a proposal is not selected for award, the proposer will be notified. NASA will explain generally why the proposal was not selected. Proposers desiring additional information may contact the selecting official who will arrange a debriefing.

(2) When a proposal is selected for award, negotiation and award will be handled by the procurement office in the funding installation. The proposal is used as the basis for negotiation. The contracting officer may request certain business data and may forward a model award instrument and other information pertinent to negotiation.

(l) ***Cancellation of NRA***. NASA reserves the right to make no awards under this NRA and to cancel this NRA. NASA assumes no liability for canceling the NRA or for anyone's failure to receive actual notice of cancellation.